

What is claimed is:

1. A conductive polymer composition comprising:
about 0.01% to about 5% by weight of a transition metal catalyst;
an electrically conductive material; and
5 a polymer binder blend comprising a first polymer or first polymer mixture,
wherein said first polymer or polymers comprising the first polymer mixture have
characteristic glass transition temperatures (T_g), and a second polymer having a
characteristic T_g, wherein the T_g of said first polymer or at least one of the
polymers comprising the first polymer mixture is higher than the T_g of said second
10 polymer, with the proviso that when, in a polymer binder blend, the first polymer,
or any polymer of the first polymer mixture, and the second polymer are the same
copolymer, with different molecular weights, neither (i) the first polymer, or any
polymer of the first polymer mixture, nor (ii) the second polymer comprise styrene,
alkyl styrene, cycloalkylstyrene or hydroxystyrene monomers.
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2. The composition of claim 1, wherein said polymer binder blend consists
essentially of the first polymer and the second polymer.
3. The composition of claim 2, wherein said second polymer is an acrylic
20 polymer, copolymer, or terpolymer.
4. The composition of claim 1, wherein said first polymer, or said first
polymer mixture, and said second polymer comprise thermoplastic polymers.
- 25 5. The composition of claim 1, wherein the transition metal catalyst is
selected from the group consisting of platinum, palladium, and rhodium.
6. The composition of claim 1, wherein the catalyst comprises platinum on
graphite.
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7. The composition of claim 1, wherein said first polymer, or polymers
comprising the first polymer mixture, is selected from the group consisting of poly

(methyl methacrylate), PMMA; poly (styrene methyl methacrylate), PSMMA; poly (styrene acrylonitrile), SAN; and poly (acrylonitrile butadiene styrene), ABS.

8. The composition of claim 5, wherein said second polymer is selected
5 from the group consisting of poly (methyl methacrylate), PMMA; poly (styrene methyl methacrylate), PSMMA; poly (styrene acrylonitrile), SAN; and poly (acrylonitrile butadiene styrene), ABS.

9. The composition of claim 1, wherein said polymer binder blend
10 comprises a first polymer mixture and said second polymer comprises an acrylic polymer, copolymer, or terpolymer.

10. The composition of claim 9, wherein the acrylic polymer, copolymer,
or terpolymer (i) is hydrophilic and (ii) comprises acrylic acid monomers that
15 comprise additional hydrophilic functional groups on the α -carbon of the acrylic acid backbone, β -carbon of the acrylic acid backbone, the pendant carboxyl-group on the α -carbon of the acrylic acid backbone, or combinations thereof.

11. The composition of claim 1, wherein the conductive material is selected
20 from the group consisting of synthetic graphite, pyrolytic graphite, and natural graphite.

12. An electrode comprising the conductive polymer composition of claim
1 on a non-conducting substrate.

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13. A conductive polymer composition comprising:
about 0.01% to about 5% by weight of a transition metal catalyst;
an electrically conductive material; and
a polymer binder comprising a hydrophilic, acrylic polymer, copolymer, or
30 terpolymer.

14. The composition of claim 13, wherein the hydrophilic, acrylic polymer, copolymer, or terpolymer comprises acrylic acid monomers comprising additional hydrophilic functional groups on the α -carbon of the acrylic acid backbone, β -carbon of the acrylic acid backbone, the pendant carboxyl-group on the α -carbon of the acrylic acid backbone, or combinations thereof.

15. The composition of claim 13, wherein the transition metal catalyst is selected from the group consisting of platinum, palladium, and rhodium.

16. The composition of claim 13, wherein the catalyst comprises platinum on graphite.

17. The composition of claim 13, wherein said polymer is a hydrophilic, acrylic copolymer or terpolymer comprising acrylate and/or alkylacrylate monomers comprising functional groups selected from the group consisting of amino, hydroxy, and carboxy.

18. The composition of claim 17, wherein the copolymer or terpolymer comprises about 0% to about 99% weight, based on the total weight of said copolymer or terpolymer, of moieties resulting from the polymerization of monomers comprising the functional groups with other monomers free of hydroxy, carboxy, and amino functional groups to form copolymers or terpolymers.

19. The composition of claim 13, wherein the conductive material is selected from the group consisting of synthetic graphite, pyrolytic graphite, and natural graphite.

20. An electrode comprising the conductive polymer composition of claim 13 on a non-conducting substrate.